UNITED STATES DISTRICT COURT

NORTHERN DISTRICT OF CALIFORNIA

TRIMBLE NAVIGATION LTD.,

Plaintiff,

v.

RHS, INC., et al.,

Defendants.
_____/

No. C 03-1604 PJH

ORDER CONSTRUING CLAIMS

On May 9, 2007, the parties' claim construction hearing to construe the disputed terms of U.S. Patent No. 5,987,383 ("the '383 patent") pursuant to Markman v. Westview Instruments, Inc., 517 U.S. 370 (1996), came on before this court. Plaintiff appeared through its counsel William Pelton, Nan Joesten, Eric Kirsch, and Grace Won. Defendants RHS, Inc. ("RHS"), CSI Wireless, Inc. ("CSI"), and Satloc Inc. ("Satloc")(collectively "defendants") appeared through their counsel Gerald Dodson, Mark Brown, Erica Wilson, and Steven Tang. Having read the parties' papers and carefully considered their arguments and the relevant legal authority, the court hereby rules as follows.

BACKGROUND

The '383 patent is directed at the use of GPS-based guidance systems in the farming and agriculture industries. Trimble has sued defendants for infringement of the '383 patent. See generally Second Amended Complaint ("SAC").

A. Background Technology

Modern farming depends on precise navigation information. Farmers, for example, are frequently required to farm open fields that numbers hundreds, even thousands, of acres. To do so, they use a variety of large agricultural vehicles and rigs – e.g., tractors – that are equipped to tow large implementations behind them, called "implements," or

"booms." A boom is comprised of long horizontal arms extending outwards from the rig on which the boom is placed, and is outfitted with nozzles capable of treating fields with various substances necessary for the cultivation and maintenance of crops – e.g., sprayers, fertilizers, and seeders.

Farmers treat their crops by driving the boom-equipped rigs back and forth along the area of a field to be covered, following a series of roughly parallel paths. As the rig drives down a path, the attached boom releases fertilizer, seeds, or spray over the crops in its wake. Given that booms can range anywhere from 20 to 200 feet in length, the potential path width of a given rig can be very large. At the end of a path, the rig is turned around, and driven in the opposite direction across the field, parallel to the path just driven. In this way, the entire field is ultimately sprayed or treated. Throughout this driving process, accuracy is critical. Farmers must avoid skips or overlaps between successive paths, since this would result in either the under-treatment or over-treatment of the crops, respectively.

Traditionally, farmers were forced to rely on their sight and visual cues to help them line up the edges of the paths they traveled in order to avoid skips or overlaps. They would, for example, employ foam markers – in which foam is released by the boom as it moves along a given path to mark the path just driven – or marker arms, an 'arm' that extends from the side of the boom or rig and cuts a line in the soil as the rig drives a given path.

With the advance of technology, however, new guidance systems have been developed to help farmers gain additional accuracy, many of which involve the use of Global Positioning System ("GPS") technology. The early GPS systems involved "parallel" guidance systems. In "parallel" guidance systems, a pattern and path for driving a rig back and forth along a series of straight, parallel paths across an open field is computed. The computation is based on the first initial straight line path driven by the operator: the operator drives a rig down line A, for example, and when he is done, the guidance system takes the data from line A, computes the length of the boom, and then programs line B

based on that collective information. The system then uses an LED light display positioned inside the rig itself, to guide the operator onto line B and ensure he stays on track. The same process is repeated for lines C, D, etc., until the entire field has been treated. It is important to note that in these parallel guidance systems, all lines are straight, and are computed based only upon the initial line A and boom distance.

Related to these parallel guidance systems are "contour" guidance systems. In contour guidance systems, vehicles do not drive straight lines, but rather curved lines. Contour guidance is particularly useful for treating fields that are irregularly shaped, or that contain obstacles. Similar to the straight line parallel guidance systems, it enables farmers to drive a curved path parallel to a previous curved path. However, the process by which a contour guidance system provides actual guidance to a rig operator can vary.

Some contour guidance systems function much the same way the straight line parallel guidance systems work: after curved line A is driven by the operator, the system takes the data from line A and adds the width of the boom to pre-compute curved line B, which the operator is then guided along through the use of an LED display. As with parallel guidance systems, line A serves as the basis for the subsequent lines computed by this type of contour guidance system.

In other contour guidance systems, the system does not pre-compute paths for the operator to follow (e.g., line B in the scenario just described). Rather, the system provides guidance instantaneously as the operator progresses down the initial, and then each subsequent, path. These systems do compute and take into account data based on a preceding path and boom width, but unlike other systems, also compute the operator's current path based on the rig's real-time positioning, speed, and heading. Because of this guidance-as-you-go factor, these types of contour guidance systems are never able to compute more than one guidance point ahead of the vehicle they are guiding.

B. The '383 Patent

Trimble filed the application for its '383 patent in 1997. The '383 patent covers a

GPS-based guidance system for agricultural farming that recognizes any "manually or operator-induced deviations" made during a given path, and replicates the altered path in the next subsequent path to be computed or driven. In other words, and as plaintiff explained at the tutorial in this action, the '383 patent improves upon prior guidance systems because it is actually capable of pre-computing each subsequent path, based on the path most recently driven by the operator, and not simply based on the initial line A driven by the operator.

The '383 patent contains twelve claims. See Declaration of Steven D. Tang in Support of Defendants' Responsive Claim Construction Brief ("Tang Decl."), Ex. A at 12:34-14:20. The majority are "method" claims, effectively claiming the method through which plaintiff's guidance system operates. The majority of claims are also dependent claims (i.e., claims 2, 4, 5, 7-10, and 12). Id.

The parties now seek construction of ten disputed terms and/or phrases, which are primarily contained in claims 1-6, and 11.

DISCUSSION

A. Legal Standard

In construing claims, the court must begin with an examination of the claim language itself. The terms used in the claims are generally given their "ordinary and customary meaning." See Phillips v. AWH Corp., 415 F.3d 1303, 1312-13 (Fed. Cir. 2005); see also Renishaw PLC v. Marposs Societa' per Azioni, 158 F.3d 1243, 1248 (Fed. Cir. 1998) ("The claims define the scope of the right to exclude; the claim construction inquiry, therefore, begins and ends in all cases with the actual words of the claim."). This ordinary and customary meaning "is the meaning that the terms would have to a person of ordinary skill in the art in question at the time of the invention...". Phillips, 415 F.3d at 131. A patentee is presumed to have intended the ordinary meaning of a claim term in the absence of an express intent to the contrary. York Products, Inc. v. Central Tractor Farm & Family Ctr., 99 F.3d 1568, 1572 (Fed. Cir. 1996).

Generally speaking, the words in a claim are to be interpreted "in light of the intrinsic evidence of record, including the written description, the drawings, and the prosecution history, if in evidence." Teleflex, Inc. v. Ficosa North Am. Corp., 299 F.3d 1313, 1324-25 (Fed. Cir. 2002) (citations omitted); see also Medrad, Inc. v. MRI Devices Corp., 401 F.3d 1313, 1319 (Fed. Cir. 2005)(court looks at "the ordinary meaning in the context of the written description and the prosecution history"). "Such intrinsic evidence is the most significant source of the legally operative meaning of disputed claim language." Vitronics Corp. v. Conceptronic, Inc., 90 F.3d 1576, 1582 (Fed. Cir. 1996).

With regard to the intrinsic evidence, the court's examination begins, first, with the claim language. See id. Specifically, "the context in which a term is used in the asserted claim can be highly instructive." Phillips, 415 F.3d at 1314. As part of that context, the court may also consider the other patent claims, both asserted and unasserted. Id. For example, as claim terms are normally used consistently throughout a patent, the usage of a term in one claim may illuminate the meaning of the same term in other claims. Id. The court may also consider differences between claims to guide in understanding the meaning of particular claim terms.

Second, the claims "must [also] be read in view of the specification, of which they are a part." Id. at 1315. When the specification reveals a special definition given to a claim term by the patentee that differs from the meaning it would otherwise possess, the inventor's lexicography governs. Id. at 1316. Indeed, the specification is to be viewed as the "best source" for understanding a technical term, informed as needed by the prosecution history. Id. at 1315. As the Federal Circuit stated in Phillips, the specification is "the single best guide to the meaning of a disputed term," and "acts as a dictionary when it expressly defines terms used in the claims or when it defines terms by implication." 415 F. 3d at 1321.

Limitations from the specification, such as from the preferred embodiment, cannot be read into the claims absent an express intention to do so. Teleflex, 299 F.3d at 1326

("The claims must be read in view of the specification, but limitations from the specification are not to be read into the claims.") (citations omitted); CCS Fitness, 288 F.3d at 1366 ("a patentee need not describe in the specification every conceivable and possible future embodiment of his invention."); Altiris v. Symantec Corp., 318 F.3d 1363, 1372 (Fed. Cir. 2003) ("resort to the rest of the specification to define a claim term is only appropriate in limited circumstances"). To protect against this, the court should not consult the intrinsic evidence until after reviewing the claims in light of the ordinary meaning of the words themselves. Texas Digital, 308 F.3d at 1204-05 (to act otherwise "invites a violation of our precedent counseling against importing limitations into the claims") (citations omitted).

Finally, as part of the intrinsic evidence analysis, the court "should also consider the patent's prosecution history, if it is in evidence." Phillips, 415 F.3d at 1317. The court should take into account, however, that the prosecution history "often lacks the clarity of the specification" and thus is of limited use for claim construction purposes. Id.

In most cases, claims can be resolved based on intrinsic evidence. See Vitronics, 90 F.3d at 1583. Only if an analysis of the intrinsic evidence fails to resolve any ambiguity in the claim language may the court then rely on extrinsic evidence, such as expert and inventor testimony, dictionaries, and learned treatises. See Vitronics, 90 F.3d at 1583 ("In those cases where the public record unambiguously describes the scope of the patented invention, reliance on any extrinsic evidence is improper"). However, the court generally views extrinsic evidence as less reliable than the patent and its prosecution history in determining how to read claim terms, even if its consideration is within the court's sound discretion. See Phillips, 415 F.3d at 1318-19.

B. Construction of Disputed Terms and Phrases

The parties dispute ten terms and/or phrases in the '383 patent.[1]

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[1] In the parties' Joint Claim Construction and Prehearing Statement ("Joint Claim Construction Statement"), the parties present their dispute by listing the ten terms and phrases one by one. See Joint Claim Construction Statement, Ex. A. In plaintiff's opening brief, however, the disputed terms are presented by claim rather than by specific term. After defendants filed an opposition following the original format, plaintiff then re-adopted the original

1. "form line"

This phrase appears in claims 1-6, and claim 11. See Tang Decl., Ex. A at 12:35-14:14; Ex. D at 2 (amended Claims 1, 3). Trimble contends that "form line" should be construed to mean "two or more computed terrestrial locations which when linked by a line approximation define a direction of travel across a field to provide steering guidance." Defendants, by contrast, contend that "form line" should be construed to mean "path across the area to be treated." Both parties agree that the term "form line" has no accepted meaning in the relevant art, and that the term must therefore be construed in a manner consistent with that provided for by the '383 patent itself, even as they disagree with the construction that the '383 patent purportedly dictates.

Preliminarily, the court notes that the construction of "form line" proves to be the single most important construction at issue before the court, as it underlies nearly every term that follows. For that reason, it follows that the majority of the constructions before the court will also be determined, at least in part, by virtue of the court's construction here.

To begin its analysis, the court first turns to the claims themselves. The term "form line" is first introduced in claim 1, which sets forth the general contour guidance method claimed by the patent. Claim 1 states that the claimed method consists of defining a "first form line," defining a "second form line," and then "updating [the] second form line" to account for any deviations made while defining the "second form line." See Tang Decl., Ex. A at 12:35-49. The overall method claimed is generally described as a "form line following" method. Id. The claims subsequent to claim 1 generally either define the method further, or define the "form line following apparatus" that enables the form line following method to take place. Nearly all claims employ repeated reference to the phrase "form line," as it was initially set forth in claim 1.

Based on the court's review of the claim language, two things become apparent.

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order of presentation in its reply brief. Accordingly, the court adheres to the order of presentation set forth by the parties in their Joint Claim Construction Statement.

First, the phrase "form line" is meant to have the same meaning in each claim, since there is no indication that the phrase is to be given a specific definition in any one claim versus another, and no indication that the phrase has been particularly defined, or referred to differently, in any specific claim. Second, the claim language does not actually shed light on the construction to be given the phrase "form line," since the language does not ever indicate what a form line *is*, merely stating at most how such "form lines" are to be defined. See Tang Decl., Ex. A at 12:35-40; Ex. D at 2 (amended Claims 1)(a first form line is to be defined "using two or more terrestrial locations," and a second form line is to be defined "using positioning data derived from GPS data and a swathing offset").

Accordingly, the court must turn to the specification for added insight. It is here that defendants' proposed construction begins to make sense. For at various points, the specification generally refers to form lines as "paths" and "computed paths" that are defined by the operator and/or by application of GPS data and a swathing offset, and which the operator is to follow across an area. See, e.g., Tang Decl., Ex. A. at 6:21-32 ("During spraying operations, LED 74 will be lit when sprayer rig 30 is following a *computed form line path*..."); 7:23-32 ("[GPS] positions (when linked together, e.g., by a straight or curved line approximation) will define the first form line – that is, the *path followed by sprayer rig 30 as it maneuvered across field 32*"); 2:31-33 ("The display device may include a moving map display and/or a light bar display which allow an operator *to follow a computed form line path*")(emphasis added). These descriptions of a form line as a path that is followed by the vehicle across the field, or as having a computed path that the operator is to follow, support the construction that "form line" means a path across the area to be treated. For in order for there to be a path that has first been computed, and which an operator must then follow, it stands to reason that the path must first extend across a given area. Else, there is nothing for the operator to follow.

A further critical factor supports this construction. That is the fact that a central element of plaintiff's claimed method is the ability to update a second "form line" to account

for deviations that occur in order to accommodate terrain features. See generally Tang Decl., claims 1, 3, 6, 11. If a form line were *not* construed, as defendants propose, as a path extending across an area to be treated, it is not wholly clear how a vehicle could deviate from it, such that an updated "form line" could be computed to take the deviations into account. In other words, a vehicle cannot deviate from any form line if the form line is not, in fact, first a path extending across an area to be treated, which the vehicle then fails to follow. Indeed, several references to the deviation process in the specification indicate that a form line is a path across an area to be treated, from which the operator may choose to deviate. See, e.g., Tang Decl., Ex. A at 1:61-2:2 ("A second form line is then computed using positioning data obtained while following the first form line and a swathing offset ... The second form line is *updated* according to one or more *deviations from its computed path*."); 5:7-15 ("at various points *along form line 54*, operated inputted deviations, such as those required to deviate around rock 40, will be input... When computing the next form line (form line 56), these operator inputted deviations must be accounted for."); 6:8-14 ("These LEDs are used to alert an operator when sprayer rig 30 has *deviated from a computed form line path*"); 8:47-50 ("Therefore, GPS receiver 60 may perform numerous computations that indicate that the sprayer rig is not following the *intended form line path* 152").

In short, the language of the specification supports the construction of "form line" as a path that extends across the entirety of an area to be treated, which an operator seeks to follow with his vehicle, and which he may choose to deviate from.[2]

The patent's figure drawings, and the specification's description of the figure drawings, also support this construction. Figure 3, for example, illustrates the "spraying rig operating in the open field crop environment in accordance with the present invention."

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[2] It should be noted that the patent nowhere indicates that the area to be treated must necessarily extend across the *entire* length of a field. While it stands to reason that this would most often be the case, the area to be treated might, in fact, be less than the whole length of a field, in the event the operator chooses to treat less than the whole length of a field.

See Tang Decl., Ex. A at 2:47-49. The specification's description of the drawing refers to "form lines" 52, 54, and 56. Turning to figure 3 to identify form lines 52, 54, and 56, each form line is portrayed as a line representing a path *across the field* that is treated by the vehicle. Figure 5 confirms this. It is not an illustrative drawing, but rather a chart depiction of the contour guidance method that is patented. It depicts the various steps that an operator undertakes when following the guidance method described in the '383 patent. It is significant, however, that in depicting the process for defining a "form line," figure 5 depicts the operator – in steps 104, 106 and 110 – as defining the first form line by beginning "contour following," at which point "GPS position data collection begins" as well. It is only when the GPS position data collection *ends*, that the operator is described as having "finished" the first form line. See Tang Decl., Ex. A at fig. 5. All subsequent "form lines" are then depicted as being computed based on the immediately preceding form line, which the operator then selects and "follows" until he "finishes." See id. (at steps 116, 118, 120, 122). The common sense interpretation of this chart is that a "form line" is not actually complete – or defined – until an operator has finished moving along his intended path, thereby defining the "form line" as a path across the area that the operator has treated. Lastly, figure 6, similar to figure 3, is an illustrative drawing that depicts different lines or paths across a field, which the specification states are "intended form lines." This language, too, supports construing the phrase "form line" as a path across an area to be treated.

Not only is defendants' proposed construction therefore supported by the language of the patent itself, as described above, but plaintiff's proposed construction also proves problematic. First, it is difficult to ascertain from it precisely what is meant, as the language employed is confusing and ambiguous. Second, and more importantly, however, plaintiff's construction does not find support in the patent's language. As plaintiff acknowledges, its proposed construction differs from defendants' in that it defines a "form line" as one that can be comprised of only a "segment" of the territory covered by a vehicle traveling across an area being treated. But the patent's figure drawings and specification point away from

such a construction.

To illustrate this point, review of figure 3 is once again helpful. Figure 3 depicts "form line 52," which as noted previously, is one path that extends across the treated field as illustrated in the drawing. Form line 52, in turn, depicts several intervals that are numbered 200, 204, 206, 208, and 210. The specification states that these numbers represent "points" at which "GPS data is collected." Tang Decl., Ex. A at 7:18-21. According to the specification, "the GPS data collected at each point is processed along with the differential GPS information (or RTK corrections) and a series of terrestrial positions are computed. These positions (when linked together, e.g., by a straight or curved line approximation) will define the first form line...". Id. at 7:23-28. In other words, the points numbered 200, 204, 206, and 208 on figure 3 are the examples of points at which GPS data is collected to compute a "terrestrial position" for the points, all of which will be linked together to create a single "form line 52." The "form line" is therefore really comprised of numerous points that are not form lines in and of themselves, but are simply linked together to create a single form line. Under plaintiff's proposed construction, however, the "form line" in figure 3 could be defined as the distance between points 200 and 204 only, since its proposed construction essentially states that a form line may be "two or more computed terrestrial locations" that are "linked by a line approximation" that merely "define a direction of travel across a field." Yet, looking at figure 3, it is inconsistent, at best, to construe the distance between any of the lesser points as a form line, when the specification specifically states that the "form line" in the drawing is the *completed* "form line 52."

In sum, and for all the reasons set forth above, the court adopts defendants' proposed construction of "form line," and construes the term "form line" as: **a "path across the area to be treated."**

2. "form line having been defined" (Claim 11)

This phrase appears in claim 11. See Tang Decl., Ex. A at 14:4-14. Trimble

contends that the phrase should be construed to mean "a form line for steering guidance based upon the computed terrestrial locations of the previous form line and a distance determined by an effective width of a towed implement." Defendants contend that it should be construed to mean "path across the area to be treated that has been computed."

There is no dispute between the parties that the form line referred to in claim 11 – i.e., the "form line having been defined" – is based on "computed" locations. Plaintiff expressly acknowledged this, both in its reply, and when questioned at the hearing on the instant matter. Accordingly, there is no dispute that the phrase at issue should be construed to mean "path across the area to be treated that has been computed."

Furthermore, and as noted in the previous discussion of "form line," defendants are correct that the '383 patent specification refers in numerous places to form lines – including subsequent form lines that take into account operator-controlled deviations from prior form lines – that are "computed." See, e.g., Tang Decl., Ex. A at 8:6-10 ("the subsequent form line is computed based on the actual path traveled by sprayer rig 30 and not just the expected path computed after the first form line was completed."); 8:32-36 (only significant deviations from a computed form line guidance path (e.g., the second form line discussed above) will be used as decision points for displaying guidance...). This supports the conclusion that a form line that has been "defined" is a form line that has been "computed," based on prior positioning information and a swathing offset.

Moreover, as defendants point out, the prosecution history also supports this conclusion. During reexamination of the '383 patent, Trimble represented to the PTO that "defining" a form line means "computing" a form line. See Tang Decl., Ex. D at 4-5. Specifically, Trimble distinguished the claims of the '383 patent from the prior Korvel patent, with the statement that Korvel did not disclose or suggest "defining an updated second form line (*that is, recomputing the previously computed form line*) according to one or more deviations from the second form line...". See id. at 4 (emphasis added). With this statement, Trimble expressly acknowledged that "defining" a "form line" is equivalent to

"computing" a "form line" – as defendants urge here. As such, Trimble will not now be allowed to circumvent this prior definition. See Hemphill v. McNeil-PPC, Inc., 25 Fed. Appx. 915, 917-18 (Fed. Cir. 2001)(prosecution history can act like a dictionary and statements made during reexamination proceedings "are relevant prosecution history when interpreting claims")(unpub. disp.).

The court therefore adopts defendants' proposed construction, finding that it is most consistent with both the '383 patent's language, and the prosecution history. The phrase "form line having been defined" is therefore construed as: **"path across the area to be treated that has been computed."**

3. "defining a second form line using positioning data derived from GPS data and a swathing offset" (Claim 1)

This phrase appears in claim 1. See Tang Decl., Ex. A at 12:34-49, Ex. D at 2 (amended Claim 1). Trimble contends that the above phrase should be construed to mean "[c]omputing two or more terrestrial locations on the field based upon the computed terrestrial locations of the previous form line and a distance determined by an effective width of a towed implement to provide steering guidance." Defendants contend that the phrase should be construed to mean "computing a second path across the area to be treated using geographical positions computed using GPS satellite data transmissions and a distance determined by the effective width of a towed implement."

The disputed phrase here is focused on what it means to define a "second form line" in accordance with the contour guidance system claimed by plaintiff. Preliminarily, as defendants point out, much of the phrase has already been construed. For example, the term "form line" has been construed to mean a "path across the area to be treated," and "defining" a form line has been construed to mean "computing" it. As such, and putting those terms together to be read consistently, "defining a second form line" must be construed, as defendants propose, to mean "computing a second path across the area to be treated." Defendants also correctly note that the parties previously agreed that

"swathing offset" should be construed as "a distance determined by the effective width of a towed implement." See Joint Claim Construction Statement, Appendix C. All of which leaves only one segment of the phrase at issue here that requires construction – that portion which states "using positioning data derived from GPS data." Plaintiff's proposal construes this as meaning "based upon the computed terrestrial locations of the previous form line," while defendants opt for the construction, "using geographical positions computed using GPS satellite data transmissions."

In construing this portion of the phrase, the specification of the '383 patent is helpful, and argues in favor of defendants' proposed construction. In referring to the guidance system's method for defining the second form line, the specification refers to the process of defining second and subsequent form lines with reference to GPS satellite data, rather than more generalized "terrestrial locations." See Tang Decl., Ex. A at 7:33-8:19 ("if additional form lines are to be sprayed, a decision made at step 114, GPS receiver 60 (or the separate processor) computes a new form line (or swath), *based on the GPS data collected while sprayer rig 30 traversed across the first form line path*."); 2:17-21 ("the present invention provides a form line following apparatus which includes a vehicle fitted with a GPS receiver *configured to receive GPS data and GPS correction information and to compute position information therefrom*").

Furthermore, the specification's description of the drawings also refers to a form line following process that is dependent upon GPS data transmissions. Figure 5, for example, depicts the process of computing form lines subsequent to the first form line, and expressly states at step 116 that these subsequent form lines are computed "based on GPS data." See id. at Ex. A, Fig. 5; 7:57-61 ("in figure 5 ..., at step 118, the operator begins the *next form line*. In general, *the operator follows the guidance information computed by GPS receiver* 60 and displayed on moving map display 64 and heading indicator 70 and also on light bar 72"); see also id. at 5:40-43 (describing Figure 4 and stating that "GPS receiver 60 *uses the GPS data provided through antenna 44 from the GPS satellites 46 and the*

differential GPS information received through antenna 48 to compute position information for sprayer rig 30"). Accordingly, based on these references to GPS data in connection with the definition of subsequent form lines, defendants' proposed construction – that "using positioning data derived from GPS data" should be construed as "using geographical positions computed using GPS satellite data transmissions" – makes the most sense.

The court therefore construes "defining a second form line using positioning data derived from GPS data and a swathing offset" as: **"computing a second path across the area to be treated using geographical positions computed using GPS satellite data transmissions and a distance determined by the effective width of a towed implement."**

4. "define an updated form line" (Claim 3)

This phrase appears in claim 3. See Tang Decl., Ex. A at 12:53-64; Ex. D at 2 (amended Claim 3). Trimble contends that the phrase "define an updated form line" should be construed to mean "computing terrestrial locations of a vehicle while the vehicle is diverted from steering guidance by the operator to accommodate a terrain feature on the field." Defendants, by contrast, contend that the phrase should be construed to mean "recompute a previously computed path across the area to be treated."

Defendants' arguments once more prevail. "Form line" has been construed to mean "path across the area to be treated," and "defining" it has been construed to mean "computing" it. Accordingly, to define an *updated* form line can only mean to "recompute a previously computed path across the area to be treated." This construction logically results from construing the disputed phrase consistently with other disputed phrases construed by the court herein.

Moreover, Trimble does not truly challenge this construction. Its objection to defendants' proposed construction is not based on the fact that defendant interprets the phrase "define an updated form line" to mean "*recompute* a previously computed" form line, but rather to defendants' construction of "form line," which is construed to mean "path

across the area to be treated." This objection has already been taken into account, and resolved, by the court's construction of the term "form line" as noted at the outset.

Accordingly, the court construes the term "define an updated form line" as: **"recompute a previously computed path across the area to be treated."**

5. "defining an updated second form line according to one or more deviations from said second form line while following said second form line" (Claim 1)

This phrase appears in claim 1. See Tang Decl., Ex. A at 12:34-49, Ex. D at 2 (amended Claim 1). Trimble contends that the instant phrase should be construed to mean "computing terrestrial locations of a vehicle while the vehicle is diverted from steering guidance by the operator to accommodate a terrain feature on the field." Defendants, by contrast, contend that the phrase should be construed to mean "recomputing the previously computed second path across the area to be treated using new geographical positions computed while deviating from the previously computed second path across the area to be treated."

Once again, given the prior constructions adopted by the court, defendants' proposed construction is the proper one. Preliminarily, and as discussed in connection with disputed term no. 4, the phrase "defin[ing] an updated form line" should be construed as "recomput[ing] a previously computed path across the area to be treated." This being the case, the only remaining part of the disputed term here that must be construed is, as defendants point out, the sub-phrase "according to one or more deviations from said second form line while following said second form line." Plaintiff's proposed construction of this sub-phrase is "while the vehicle is diverted from steering guidance by the operator to accommodate a terrain feature on the field," while defendants' construction of the sub-phrase is "using new geographical positions computed while deviating from the previously computed second path across the area to be treated."

The parties' competing constructions of the above sub-phrase boil down to one

fundamental issue: whether an updated second form line, which must be based on the operator's deviations from the original second form line, is updated and defined contemporaneously as the vehicle proceeds point by point down its deviated path, or whether the updated second form line is updated to constitute a new path that extends across the area to be treated, *based* on the geographical positions recorded while the operator deviated from the original second form line. This is essentially the same debate that underlies the parties' dispute over the term "form line" – i.e., whether form lines should be defined as extending across the area to be treated, or as created contemporaneously with the vehicle's progress.

For the reasons already discussed in connection with the proper construction to be given the term "form line," the disputed term here must also be construed as a computed path across the area to be treated, which is *based* on the new geographical positions recorded while the operator deviated from the original second form line. In addition, the '383 patent's language and specification support a construction that deviating from the second form line while following it, as referred to in the disputed term here, means a process whereby: (a) the operator deviates from the previously computed second form line path; and (b) GPS data records the new geographical positions of the operator associated with the deviations. This GPS recordation of the new geographical positions corresponding with the deviated second form line is what it means to "update" the second form line. Only after updating the second form line with the new GPS data, is the updated second form line "defined," by computing an updated path to extend across the area to be treated, based on the new GPS data that recorded the deviated second form line path taken by the operator. See Tang Decl., Ex. A at Abstract ("The updating generally occurs by following the second form line as defined by the positioning data and the swathing offset and then deviating from the second form line to accommodate one or more terrain features. New GPS data is collected during these steps of following and deviating from the second form line and new positions are computed from the new GPS data. Finally, the *updated second form line is*

defined using the new positions computed from the new GPS data."); 3:20-25 ("GPS data may be collected during the steps of following and deviating from the computed second form line path and one or more positions computed therefrom. An *updated second form line may then be defined using the computed positions*.").

Given this description of the process by which the second form line is updated and then defined, the ordinary plain meaning of the disputed term here is in line with defendants' proposed construction. Accordingly, the court construes "defining an updated second form line according to one or more deviations from said second form line while following said second form line" should be construed as: **"recomputing the previously computed second path across the area to be treated using new geographical positions computed while deviating from the previously computed second path across the area to be treated."**

6. "using the computed positions to define the updated second form line" (Claim 1)

This phrase appears in claim 1. See Tang Decl., Ex. A at 12:34-49, Ex. D at 2 (amended Claim 1). Trimble contends that it should be construed to mean "using the computed terrestrial locations obtained during the deviation to define the direction of path or travel actually taken by the vehicle." Defendants, by contrast, contend that the phrase should be construed to mean "using the new positions computed while deviating from the previously computed second path across the area to recompute the second path across the area to be treated."

The phrase "define an updated form line" has already been discussed, and has been construed to mean "recompute a previously computed path across the area to be treated." Since this is the case, the only issue is what the sub-phrase "using the computed positions" means.

The meaning of this sub-phrase is illuminated by looking at the context surrounding the sub-phrase in claim 1. See Tang Decl., Ex. A at 12:34-49, Ex. D at 2 (amended Claim

1). Prior to introduction of the term "computed positions," the language in claim 1 discusses the process of defining an updated second form line. See id. at Ex. D at 2. As the claim language describes it, a second from line is updated when the operator makes one or more deviations from the second form line while following the second form line, new GPS data is collected during this process, and the data is used to "comput[e] one or more positions therefrom...". See id. Only after positions are computed based on the GPS data collected through the deviation process, according to the claim language, are these "computed positions" then used to define the updated second form line.

From this description, therefore, it is apparent that the sub-phrase "computed positions" refers back to, and is based upon, the collection of new GPS data that occurred while the operator followed the second form line, and deviated from it. "Using computed positions," therefore, should be construed as using those positions that were computed while following and deviating from the original second form line. See also '383 patent specification, Tang Decl., Ex. A at 2:4-12 ("New GPS data is collected during these steps of *following and deviating from the second form line* (as computed) *and new positions are computed from the new GPS data*").

As such, and in view of the fact that "form line" has already been construed to mean a "path across the area to be treated," it is therefore clear that, with respect to the disputed term at issue here, defendants are correct. The court therefore construes the term "using the computed positions to define the updated second form line" as: **"using the new positions computed while deviating from the previously computed second path across the area to recompute the second path across the area to be treated."**

7. "following a previously computed form line having been defined using positioning information derived from earlier received GPS data and a swathing offset" (Claims 3, 6, 11)

This phrase appears in claims 3, 6, and 11, although the phrase appears in differently worded fashion in each claim. See Tang Decl., Ex. A at 12:53-63; 13:6-15; 14:4-

14. The parties agree, however, that the phrases all have the same meaning despite this, and that the wording of claim 3 is representative. Trimble contends that this disputed phrase should be construed to mean "controlling a vehicle based on steering guidance derived from previously computed terrestrial locations on the field and a swathing offset." Defendants, by contrast, contend that the phrase should be construed to mean "following a previously computed path across the area to be treated, where the path was computed using geographical positions computed from earlier received GPS satellite data transmissions and a distance determined by the effective width of a towed implement." As is the case with the majority of the terms before the court, defendants' proposed construction offers the best interpretation of the claim language.

Beginning with the claim language, and using claim 3 as representative, claim 3 covers a "form line following apparatus" that is comprised of a vehicle fitted with a GPS receiver, and a processor capable of defining updated form lines. See Tang Decl., Ex. A at 12:53-63. According to claim 3, the processor will define an updated form line according to position information computed while the vehicle was doing two things: (1) following a prior form line; and (2) deviating from the prior form line. See Tang Decl., Ex. A at 12:57-63. The disputed phrase can be found in claim 3's description of the processor, and specifically, in the description of the updated form line that the processor defines. Id. The disputed term modifies the first step in this two-step process. Specifically, it describes the prior form line that the vehicle was following, from which the vehicle deviated. In other words, the phrase describes the original expected path across the area to be treated, that the vehicle was attempting to follow. Seen from this perspective, the disputed phrase simply clarifies that this original form line was itself computed using "earlier received GPS data and a swathing offset."

With this understanding of the disputed phrase and its surrounding context in mind, and in view of the court's prior construction of "form line," it is defendants' proposed construction, as opposed to plaintiff's, that most accurately interprets the meaning of the

disputed phrase. Defendants' construction describes – as the disputed phrase is meant to do – that "following" the original form line simply means following a previously computed path, which was in turn computed (i.e., defined) based on the geographical positions computed from earlier GPS data and a swathing offset.

The court therefore construes the term "following a previously computed form line having been defined using positioning information derived from earlier received GPS data and a swathing offset" as: **"following a previously computed path across the area to be treated, where the path was computed using geographical positions computed from earlier received GPS satellite data transmissions and a distance determined by the effective width of a towed implement."**

8. "form line following information corresponding to the updated form line" (Claim 4)

This phrase appears in claim 4. See Tang Decl., Ex. A at 12:64-67. Trimble contends that phrase no. 8 should be construed to mean "steering guidance provided to the operator based upon terrestrial locations representing the direction or path of travel actually taken by the vehicle on the previous pass," while defendants urge that the court construe the phrase to mean "the recomputed path across the area to be treated that is to be followed."

The language at issue appears in claim 4. Both parties agree that claim 4 is targeted at the display device that will actually provide "steering guidance" to the operator of the vehicle. They simply dispute the meaning of "updated form line." In essence, plaintiff contends that the updated form line information that will be conveyed via the display device corresponds to a form line that does *not* extend across the field, and defendants assert that by updated form line, the patent refers to a form line that *does* extend across the field.

Once again, this rehashes arguments as to "form line" that have been already resolved. Consistent with the court's prior resolution that "form line" means a path across

the area to be treated, "updated" form line means a recomputed path across the area to be treated, and "form line following information corresponding to the updated form line" is therefore construed as: **"the recomputed path across the area to be treated that is to be followed."**

9. "deviating from the previously computed form line to accommodate one or more terrain features" (Claims 1, 3, 6, 11)

This phrase appears in claims 1, 3, 6, and 11. See Tang Decl., Ex. A at 12:34-49; 12:53-63; 13:6-15; 14:4-14; Ex. D at 2 (amended Claims 1, 3). Once again, the precise wording of each claim's phrase differs, but the parties agree that the phrases all have the same meaning, and that the wording of claims 3 and 6 is representative. Trimble contends that above phrases should be construed to mean "altering the direction of travel provided by steering guidance to avoid obstacle or terrain features."[3] Defendants contend that the phrase should be construed to mean "deviating from a previously computed path across the area to be treated in order to avoid at least one terrain feature."

In view of the court's prior constructions, there is very little to be construed here. In accordance with those constructions, "deviating from the previously computed form line" must be construed, as defendants propose, to mean "deviating from a previously computed path across the area to be treated." The only issue is therefore what it means to "accommodate one or more terrain features."

The specification supports defendants' arguments that "accommodate" means "avoid." For in referring to the process of deviating from a prior computed path in order to

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[3] Prior to the claim construction hearing, defendants submitted an administrative request calling the court's attention to the fact that plaintiff's reply brief for the first time changed the word "avoid" in plaintiff's proposed construction to "accommodate." As the court indicated at the hearing, plaintiff's introduction of new arguments and terms on reply, without the filing of a jointly revised claim construction statement, is improper, and plaintiff's alternative unilateral filing of a revised claim construction statement (filed one day prior to the hearing) is rejected. Although the court allowed plaintiff to make their revised arguments at the hearing, the court nonetheless GRANTS defendants' administrative motion to exclude plaintiff's new arguments, and plaintiff is restricted to the proposed construction it set forth in the Joint Claim Construction Statement.

accommodate obstacles, the specification specifically states in several places that such deviations are undertaken in order to "avoid" or to go "around" obstacles. See, e.g., Tang Decl., Ex. A at 4:39-45 ("Field 32 also includes a number of terrain features or obstacles such as rocks or boulders... During spraying operations, sprayer rig 30 must avoid these obstacles..."); 4:50-66 ("As shown by the guidance path information presented as guidance path 50, sprayer rig 30 must avoid the rocks 40 and trees 42..."); 5:5-7 ("guidance path 50 will be such as to accommodate operator inputted corrections for deviations around obstacles...").

As such, the proper construction of "accommodate" is, as defendants argue, "avoid." To that end, and consistently with the other constructions adopted by the court herein, the court construes the term "deviating from the previously computed form line to accommodate one or more terrain features" as: **"deviating from a previously computed path across the area to be treated in order to avoid at least one terrain feature."**

10. "position information" (Claims 1, 3, 6-9, 11)

This phrase appears in claims 1, 3, 6-9, and 11. See Tang Decl., Ex. A at 12:34-49; 12:53-63; 13:6-22; 14:4-14; Ex. D at 2 (amended Claims 1, 3). In each claim, the phrase appears differently, as 'position information,' 'positioning information,' or 'positioning data.' The Joint Claim Construction Statement states that the parties have agreed that these terms have the same meaning, and that the court's construction of 'position information' will dictate construction of the remaining two phrases.[4] Trimble contends that the above phrases – represented by the term "position information" – should be construed to mean "data used in determining location." Defendants, by contrast, contend that the phrase should be construed to mean "geographic positions computed by a GPS receiver."

[4] Both in the briefing and at the hearing on this matter, counsel indicated that there is disagreement, in fact, over whether "position information" or "positioning information" is the representative term to be construed by the court. The court has construed "position information" as the representative term, in view of the fact that this is the term that was set forth in the parties' Joint Claim Construction Statement. See Joint Claim Construction Statement, Appx. A.

Plaintiff's arguments are largely based on the specification language in the patent that notes that the data used by the claimed system in pinpointing precise geographic location is not all GPS data. The specification states, for example, that correction information from "FM subcarrier broadcasts or from other sources" may be used to more precisely pinpoint geographic location, and furthermore states that the guidance system described in the '383 patent may be "supplemented with non-satellite based guidance systems and methodologies. See Tang Decl., Ex. A at 5:32-40; 4:6-11(noting that supplemental systems could include "inertial navigation systems, distance and gyro compass and/or other heading indicator systems, laser range finding and bearing indicator systems, etc."). According to plaintiff, this means that "position data" must be construed in a fashion that is not limited to "GPS" references.

Plaintiff is correct, to an extent. The specification does, indeed, contemplate that information aside from GPS satellite information may be used to determine the precise geographical location of the vehicle at any given time. See, e.g., id. For instance, as cited above, the specification notes that the data provided via the GPS antenna mounted in the vehicle may come "from one of a variety of sources," including non-GPS sources. See id. at 5:30-43.

However, the specification *also* goes on to state that all information – *both* GPS satellite data, *and* the "differential GPS correction information" that comes from non-GPS sources via GPS antenna – will be transmitted through the "GPS receiver." See id. at 40-43 ("GPS receiver 60 uses the GPS data provided through antenna 44 from the GPS satellites 46 *and* the differential GPS information received through antenna 48 to compute position information for sprayer rig 30")(emphasis added). Accordingly, defendants' construction, which states that position information means geographic positions computed by a "GPS receiver," is not only consistent with the specification, but it does not, as plaintiffs argue, limit position information to GPS sources only; it specifically takes "differential GPS correction information," which may be based on *non*-GPS sources, into

account. Plaintiffs' proposed construction, by contrast, ignores the fact that all data will be transmitted through a GPS receiver specifically.

Moreover, plaintiff's argument that, pursuant to the specification's language, non-GPS "systems and methodologies" may also provide "position information" – therefore prohibiting a construction that is tied to the GPS system – is not plausible. Plaintiff relies on the specification's statement that "the form line following guidance system described herein may be supplemented with non-satellite based guidance systems and methodologies, such as inertial navigation systems, distance and gyro compass and/ or other heading indicator systems, etc." See Tang Decl., Ex. A at 4:6-11. However, the key word in this specification is that the guidance system actually described by the patent may be "supplemented" with non-satellite based guidance systems. This is not the same as saying that the guidance system described by the patent *includes* non-satellite based guidance systems. Indeed, following the very sentence that plaintiff relies on, the specification states that "the use of such systems to assist in terrestrial navigation is well known in the art and will not be described further *so as not to unnecessarily obscure the present invention*." See id. at 4:11-14. This statement belies plaintiff's argument here, since it expressly states that the other non-GPS systems that plaintiff points out are distinct, and different from, the present GPS-based system described by the patent's claims. As such, the term "position information" – as used in the claims – should not be construed to include non-GPS based systems entirely, even though it should be construed to include "differential GPS correction information" that stems in part from non-GPS satellite sources – as long as those sources are transmitted through a "GPS receiver."

In sum, and for all the above reasons, the court adopts defendants' proposed construction. As such, "position information" is construed as: **"geographic positions computed by a GPS receiver."**

C. Conclusion

In accordance with the foregoing, and for the reasons discussed above, the court

construes the parties' disputed terms as follows:

1. "form line" means a "path across the area to be treated."
2. "form line having been defined" means "path across the area to be treated that has been computed."
3. "defining a second form line using positioning data derived from GPS data and a swathing offset" means "computing a second path across the area to be treated using geographical positions computed using GPS satellite data transmissions and a distance determined by the effective width of a towed implement."
4. "define an updated form line" means "recompute a previously computed path across the area to be treated."
5. "defining an updated second form line according to one or more deviations from said second form line while following said second form line" means "recomputing the previously computed second path across the area to be treated using new geographical positions computed while deviating from the previously computed second path across the area to be treated."
6. "using the computed positions to define the updated second form line" means "using the new positions computed while deviating from the previously computed second path across the area to recompute the second path across the area to be treated."
7. "following a previously computed form line having been defined using positioning information derived from earlier received GPS data and a swathing offset" means "following a previously computed path across the area to be treated, where the path was computed using geographical positions computed from earlier received GPS satellite data transmissions and a distance determined by the effective width of a towed implement."
8. "form line following information corresponding to the updated form line"

means "the recomputed path across the area to be treated that is to be followed."

9. "deviating from the previously computed form line to accommodate one or more terrain features" means "deviating from a previously computed path across the area to be treated in order to avoid at least one terrain feature."

10. "position information" means "geographic positions computed by a GPS receiver."

IT IS SO ORDERED.

Dated: May 29, 2007

PHYLLIS J. HAMILTON
United States District Judge